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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,883	08/15/2001	Sheng Ma	YOR920010682US1	9298

7590 03/08/2004  
Ryan, Mason & Lewis, LLP  
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EXAMINER

LE, MIRANDA

ART UNIT PAPER NUMBER

2177

DATE MAILED: 03/08/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

DM

**Office Action Summary**

Application No.

09/929,883

Applicant(s)

MA ET AL.

Examiner

Miranda Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings submitted 08/15/01 have been objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons submitted in Form PTO 948.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless:

(c) the invention was described in

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 7-11, 14, 17-18, 23-27, 30, 33, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Wong et al. (US Patent No. 5,809,499).

Wong anticipated independent claims 1, 19, 25, by the following:

**As to claims 1, 17, 33,** Wong teaches "A computer based method of mining one or more patterns (i.e. pattern discovery, Fig. 1) in an input data set of items (col. 3, lines 58- 63 and col. 4, lines 53-62), the method comprising the steps of: identifying one or more sets of items in the input data set as one or more patterns based on whether the one or more sets respectively satisfy a dependency test (statistical significance test T)" at col. 2, line 58 to col. 3, line 18,

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"the dependency test being satisfied when each of the items in a set of items is dependent upon each other item with a prescribed significance level" at col. 4, line 1 to col. 5, line 67;

"outputting the one or more identified patterns based on results of the dependency tests" at col. 11, lines 13-47, Fig. 1.

**As to claims 8, 24, 34,** Wong teaches "A computer-based method of mining one or more patterns in an input data set of items (col. 3, lines 58- 63, col. 4, lines 53-62), the method comprising the steps of: obtaining an input data set of items" at col. 3, lines 58- 63 and col. 4, lines 53-62;

"searching the input data set of items to identify one or more sets of items in the input data set as one or more patterns based on whether the one or more sets respectively satisfy a dependency test" at col. 2, line 58 to col. 3, line 18,

"the dependency test being, satisfied when each of the items in a set of items is dependent upon each other item with a prescribed significance level" at col. 4, line 1 to col. 5, line 67;

"outputting the one or more identified patterns based on results of the dependency tests" at col. 11, lines 13-47, Fig. 1.

**As to claims 2, 18,** Wong teaches "the dependency test employs a normal approximation test when an occurrence count of the items of a set is above a threshold value, and a Poisson approximation test otherwise" at col. 4, lines 20-44, col. 6, lines 43-60.

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**As to claims 7, 23,** Wong teaches “the input data set comprises event data” at col. 5, lines 34-47.

**As to claims 9, 25,** Wong teaches “prior to the searching step, the step of normalizing the input data set” at col. 7, line 41 to col. 8, line 29.

**As to claims 10, 26,** Wong teaches “the input data set comprises event data and the normalizing step comprises transforming at least a portion of the event data into event classes such that the event data is non-application-dependent” at col. 8, lines 7-56.

**As to claims 11, 27,** Wong teaches “the event data transformation step further comprises the step of mapping two or more attributes associated with an event into an event class” at col. 13, line 62 to col. 14, line 38.

**As to claims 14, 30,** Wong teaches “the outputting step further comprises converting the one or more identified patterns into a human readable format” at col. 4, lines 51-63 and Fig. 1.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3-5, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (US Patent No. 5,809,499), in view of Rangan et al. (US Patent No. 6,434,570).

As to claims 3, 19, Wong does not explicitly teach "a minimum support threshold value associated with the dependency test increases as the frequency of items in a set increases, when a probability that the set is in the input data set is less than a predetermined percentage".

However, Rangan teaches this limitation at col. 3, line 1 to col. 4, line 51.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Rangan to include "a minimum support threshold value associated with the dependency test increases as the frequency of items in a set increases, when a probability that the set is in the input data set is less than a predetermined percentage" in order to provide the probability that an observation of the sample size or less will be seen in the operation of the network, as taught by Rangan at col. 2, lines 27-29.

As to claims 4, 20, Rangan teaches "the predetermined percentage is approximately fifty percent" at col. 5, lines 24-67.

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**As to claims 5, 21,** Wong does not specifically teach “a minimum support threshold value associated with the dependency test decreases. as the size of an item set increases”.

However, Rangan teaches this limitation at col. 3, line 1 to col. 4, line 51.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Rangan to include “a minimum support threshold value associated with the dependency test decreases. as the size of an item set increases” in order to provide the probability that an observation of the sample size or less will be seen in the operation of the network, as taught by Rangan at col. 2, lines 27-29.

6. Claims 6,12-13, 15-16, 22, 28-29, 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (US Patent No. 5,809,499), in view of Agrawal et al. (US Patent No. 5,819,266).

**As to claims 6, 22,** Wong does not expressly teach “the input data set comprises transaction data”. However, Agrawal teaches this limitation at col. 5, line 52 to col. 6, line 5.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Agrawal to include “the input data set comprises transaction data” in order to identify large sequences in the database, as taught by Agrawal at col. 3, line 8.

**As to claims 12, 28,** Wong does not specifically teach “the mapping step is performed in accordance with a lookup table”. However, Agrawal teaches this limitation at col. 6, line 31 to col. 7, line 31, Tables 1-4.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Agrawal to include "the mapping step is performed in accordance with a lookup table" in order to mine the database to identify sequences of time-spaced transactions which are large, and which preferably are also maximal sequences, as taught by Agrawal at col. 7, lines 42-44.

**As to claims 13, 29,** Wong does not teach "the event data is in a tabular form with a first number of columns before the transformation step and in a tabular form with a second number of columns after the transformation step, the second number of columns being less than the first number of columns". However, Agrawal teaches this limitation at col. 6, line 33 to col. 7, line 31, Tables 1-4.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Agrawal to include "the event data is in a tabular form with a first number of columns before the transformation step and in a tabular form with a second number of columns after the transformation step, the second number of columns being less than the first number of columns" in order to mine the database to identify sequences of time-spaced transactions which are large, and which preferably are also maximal sequences, as taught by Agrawal at col. 7, lines 42-44.

**As to claims 15, 31,** Wong does not teach "the searching step further comprises the step of performing a level-wise scan based on a set length to determine candidate sets of in the input



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data set that satisfy the dependency test". However, Agrawal teaches this limitation at col. 3, lines 9-49.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wong with the teachings of Agrawal to include "the searching step further comprises the step of performing a level-wise scan based on a set length to determine candidate sets of in the input data set that satisfy the dependency test" in order to provide a system and method for finding sequences of temporally-spaced transactions in a database which repeat with a user-defined degree of regularity, and which guarantees that all sequences of interest are identified..

**As to claims 16, 32,** Agrawal teaches "the step of pruning candidate sets" at col. 9, line 59 to col. 10, line 17, as taught by Agrawal at col. 2, lines 57-61.

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*Conclusion*

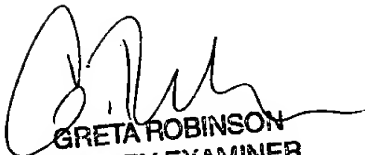
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (703) 305-3203. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene, can be reached on (703) 305-9790. The fax number to this Art Unit is (703) 872-9306. The TC 2100's Customer Service number is (703) 306-5631.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Miranda Le  
February 28, 2004

  
GRETA ROBINSON  
PRIMARY EXAMINER